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10/722,285	11/25/2003	Rahul Shrivastav	5853-278-1	9081

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EXAMINER
SHAH, PARAS D

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09/25/2008*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-11,13-21 and 23-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-11, 13-21, and 23-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   This communication is in response to the Arguments and Amendments filed on 09/25/2008. Claims, 1, 3-11, 13-21, and 23-30 are pending and have been examined. The Applicant's arguments and amendments have been considered, but they do not place this case in condition for Allowance. Accordingly, this office action has been made final.

2.   All previous objections and rejections directed to the Applicant's disclosure and claims not discussed in this Office Action have been withdrawn by the Examiner.

Response to Arguments

3.   Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection (see below).

Response to Amendment

4.   This communication is response to applicant's amendment filed 03/21/2008. The applicant amended claims 1, 3-11, 13-21, and 23-30.

Claim Rejections - 35 USC § 103

5.   **Claims 1, 11, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over BAYYA et al. (US 6,446,038) in view of REX et al. (GB 0112439.5, 05/22/2001) in view of TREURNIET et al. (Patent No.: US 7,164,771).

6.   Regarding **claim 1**, BAYYA teaches a method of diagnosing voices comprising:

recording a voice signal (see col. 2, lines 54, microphone receives corrupted speech);

generating a voice signal based on the speaker (see col. 2, lines 53-54, A/D converter)

processing a received voice signal ("receives an input corresponding to the corrupted speech signal", BAYYA, column 2, lines 49-50) (e.g. The speech signal corresponds to a speaker's voice from whom it was uttered);

identifying one or more attributes of said speaker's voice by analyzing said processed voice signal ("generates corresponding signals 18 representing the amount of distortion in the corrupted speech signal for each of the plurality of distortion measure utilized", BAYYA, column 3, lines 21-24 and col. 3-4, equations 1-6, power spectra, LPC, cepstral values are calculated in order to calculate distortion measure) (e.g. The speech signal corresponds to a speaker's voice from whom it was uttered, where attributes of the speech signal are identified);

comparing said identified attributes in said speaker's voice with one or more baseline vocal quality attributes derived from at least one baseline voice signal (see BAYYA, columns 3-4, equations 1-6), said derived attributes associated with at least one baseline measure of vocal quality of a human speaker ("the speech reference vectors 16 are obtained from a large number of clean speech samples", BAYYA, column 2, lines 57-58) (e.g. The reference and the distorted speech are compared. The baseline vocal quality is derived from reference signal, which is based on various

speech references (see col. 2, lines 57-60). Vocal quality evaluated in terms of

distortion (see col. 5, lines 28-34)); and

based upon said comparing step, determining at least one objective measure of vocal quality of said speaker's voice ("predicting the subjective scores corresponding to the quality of speech based on the objective measurements", BAYYA, column 4, lines 58-59), said at least one objective measure defining a degree of vocal quality of said speaker's voice ("value between 1 and 5", BAYYA, column 5, line 6) relative to said at least one baseline measure of vocal quality of a human speaker ("the speech reference vectors 16 are obtained from a large number of clean speech samples", BAYYA, column 2, lines 57-58 and see col. 2, lines) (e.g. The comparisons are done between the speech signal and reference speech vectors of clean speech. Hence vocal quality is measured between the received signal and reference speech. It is obvious that the reference speech comes from human speakers (see col. 2, lines 57-60, speech is recorded in clean environment)).

However, BAYYA does not disclose recording a speaker's voice directly.

In the same field of field of quality measurement, REX does teach recording a speaker's voice directly (see page 5 of the application lines 29-page 6, line 5, where microphone receives a speech signal from speaker).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the recording of a speaker's voice by REX to process the input received by BAYYA in order to improve speech quality in the presence of noise (see REX, page 5 of the application itself, lines 1-4)

However, BAYYA in view of REX does not disclose using an auditory model.

In the same field of field of quality measurement, TREURNIET teaches processing a received voice signal associated with a speaker using an auditory model ("peripheral ear processor 22 that processes signals according to a peripheral ear model", TREURNIET, column 4, lines 24-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the peripheral ear model of TREURNIET to process the input received by BAYYA in view of REX in order to better estimate how the signal will be perceived (see TREURNIET, column 2, lines 19-22).

7.   Regarding **claim 11**, BAYYA teaches a system for diagnosing voices comprising:

record a voice signal (see col. 2, lines 54, microphone receives corrupted speech);

generate a voice signal based on the speaker (see col. 2, lines 53-54, A/D converter)

process a received voice signal associated with a speaker's voice ("receives an input corresponding to the corrupted speech signal", BAYYA, column 2, lines 49-50) (e.g. The speech signal corresponds to a speaker's voice from whom it was uttered);

identify one or more attributes of said speaker's voice by analyzing said processed voice signal ("generates corresponding signals 18 representing the amount of distortion in the corrupted speech signal for each of the plurality of distortion measure utilized", BAYYA, column 3, lines 21-24 and col. 3-4, equations 1-6, power spectra, LPC, cepstral values are calculated in order to calculate distortion measure) (e.g. The

speech signal corresponds to a speaker's voice from whom it was uttered, where attributes of the speech signal are identified);;

compare said identified attributes in said speaker's voice with one or more baseline vocal quality attributes derived from at least one baseline voice signal (see BAYYA, columns 3-4, equations 1-6), said derived attributes associated with at least one baseline measure of vocal quality of a human speaker ("the speech reference vectors 16 are obtained from a large number of clean speech samples", BAYYA, column 2, lines 57-58) (e.g. The reference and the distorted speech are compared. The baseline vocal quality is derived from reference signal, which is based on various speech references (see col. 2, lines 57-60). Vocal quality evaluated in terms of distortion (see col. 5, lines 28-34)); and

determine at least one objective measure of vocal quality of said speaker's voice ("predicting the subjective scores corresponding to the quality of speech based on the objective measurements", BAYYA, column 4, lines 58-59), said at least one objective measure defining a degree of vocal quality of said speaker's voice ("value between 1 and 5", BAYYA, column 5, line 6) relative to said at least one baseline measure of vocal quality of a human speaker ("the speech reference vectors 16 are obtained from a large number of clean speech samples", BAYYA, column 2, lines 57-58 and see col. 2, lines) (e.g. The comparisons are done between the speech signal and reference speech vectors of clean speech. Hence vocal quality is measured between the received signal and reference speech. It is obvious that the reference speech comes from human speakers (see col. 2, lines 57-60, speech is recorded in clean environment)).

However, BAYYA does not disclose recording a speaker's voice directly.

In the same field of field of quality measurement, REX does teach recording a speaker's voice directly (see page 5 of the application lines 29-page 6, line 5, where microphone receives a speech signal from speaker).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the recording of a speaker's voice by REX to process the input received by BAYYA in order to improve speech quality in the presence of noise (see REX, page 5 of the application itself, lines 1-4)

However, BAYYA in view of REX does not disclose using an auditory model.

In the same field of field of quality measurement, TREURNIET teaches processing a received voice signal associated with a speaker using an auditory model

("peripheral ear processor 22 that processes signals according to a peripheral ear model", TREURNIET, column 4, lines 24-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the peripheral ear model of TREURNIET to process the input received by BAYYA in view of REX in order to better estimate how the signal will be perceived (see TREURNIET, column 2, lines 19-22).

8.   Regarding **claim 21**, BAYYA teaches a machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a machine for causing the machine to perform the steps of:

recording a voice signal (see col. 2, lines 54, microphone receives corrupted speech);

generating a voice signal based on the speaker (see col. 2, lines 53-54, A/D converter)

processing a received voice signal associated with a speaker's voice ("receives an input corresponding to the corrupted speech signal", BAYYA, column 2, lines 49-50) (e.g. The speech signal corresponds to a speaker's voice from whom it was uttered);

identifying one or more attributes of said speaker's voice by analyzing said processed voice signal ("generates corresponding signals 18 representing the amount of distortion in the corrupted speech signal for each of the plurality of distortion measure utilized", BAYYA, column 3, lines 21-24 and col. 3-4, equations 1-6, power spectra, LPC, cepstral values are calculated in order to calculate distortion measure) (e.g. The

speech signal corresponds to a speaker's voice from whom it was uttered, where attributes of the speech signal are identified);;

comparing said identified attributes in said speaker's voice with one or more baseline vocal quality attributes derived from at least one baseline voice signal (see BAYYA, columns 3-4, equations 1-6), said derived attributes associated with at least one baseline measure of vocal quality of a human speaker ("the speech reference vectors 16 are obtained from a large number of clean speech samples", BAYYA, column 2, lines 57-58) (e.g. The reference and the distorted speech are compared. The baseline vocal quality is derived from reference signal, which is based on various speech references (see col. 2, lines 57-60). Vocal quality evaluated in terms of distortion (see col. 5, lines 28-34)) (e.g. The comparisons are done between the speech signal and reference speech vectors of clean speech. Hence vocal quality is measured between the received signal and reference speech. It is obvious that the reference speech comes from human speakers (see col. 2, lines 57-60, speech is recorded in clean environment)); and

based upon said comparing step, determining at least one objective measure of vocal quality of said speaker's voice ("predicting the subjective scores corresponding to the quality of speech based on the objective measurements", BAYYA, column 4, lines 58-59), said at least one objective measure defining a degree of vocal quality of said speaker's voice ("value between 1 and 5", BAYYA, column 5, line 6) relative to said at least one baseline measure of vocal quality of a human speaker ("the speech reference

vectors 16 are obtained from a large number of clean speech samples", BAYYA,

column 2, lines 57-58 and see col. 2, lines).

However, BAYYA does not disclose recording a speaker's voice directly.

In the same field of field of quality measurement, REX does teach recording a

speaker's voice directly (see page 5 of the application lines 29-page 6, line 5, where

microphone receives a speech signal from speaker).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to use the recording of a speaker's voice by REX to

process the input received by BAYYA in order to improve speech quality in the

presence of noise (see REX, page 5 of the application itself, lines 1-4)

However, BAYYA in view of REX does not disclose using an auditory model.

In the same field of field of quality measurement, TREURNIET teaches

processing a received voice signal associated with a speaker using an auditory model

("peripheral ear processor 22 that processes signals according to a peripheral ear

model", TREURNIET, column 4, lines 24-25).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to use the peripheral ear model of TREURNIET to

process the input received by BAYYA in view of REX in order to better estimate how the

signal will be perceived (see TREURNIET, column 2, lines 19-22).

9.   **Claims 3-5, 13-15, and 23-25** are rejected under 35 U.S.C. 103(a) as being

unpatentable over BAYYA et al. (US 6,446,038) in view of REX in view of TREURNIET

et al. (Patent No.: US 7,164,771), and in further view of DEAL et al. ("Some Waveform

and Spectral Features of Vowel Roughness").

10.   Regarding **claim 3**, the combination of BAYYA in view of REX in view of

TREURNIET teaches all the claimed limitation of claim 1.

However, BAYYA in view of REX in view of TREURNIET do not disclose that the

measure of voice quality is at least one of roughness and hoarseness.

In the same field of speech quality measurement, DEAL discloses a method of

measuring vocal roughness. DEAL teaches a measure of voice quality that is at least

one of roughness and hoarseness ("provide a quantitative acoustic index predictive of

perceived vowel roughness", DEAL, p. 251, 4th paragraph, where vowel roughness is

associated with voice roughness and hoarseness, see DEAL, p. 251, 2nd paragraph).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to use the measurement method of DEAL as one of

the distortion measures of BAYYA in order to increase the versatility of the quality

measurement by determining vowel quality contained in a speech signal (see DEAL,

page 250, last three lines of 1st paragraph).

11.   Regarding **claim 4**, DEAL further teaches that the voice quality attributes of the

test voice signal include changes in pitch over time and changes in loudness over time

("acoustic measures of period and amplitude variation", DEAL, p. 251, 4th paragraph).

12.   Regarding **claim 5**, DEAL further teaches that the voice quality attribute of the

test voice signal includes a measure of partial loudness ("acoustic measures of...

spectral noise level", DEAL, p. 251, 4th paragraph).

13.   Regarding **claim 13**, the combination of BAYYA in view of REX in view of

TREURNIET teaches all the claimed limitation of claim 11.

However, BAYYA in view of REX in view of TREURNIET do not disclose that the

measure of voice quality is at least one of roughness and hoarseness.

In the same field of speech quality measurement, DEAL discloses a method of

measuring vocal roughness. DEAL teaches a measure of voice quality that is at least

one of roughness and hoarseness ("provide a quantitative acoustic index predictive of

perceived vowel roughness", DEAL, p. 251, 4th paragraph, where vowel roughness is

associated with voice roughness and hoarseness, see DEAL, p. 251, 2nd paragraph).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to use the measurement method of DEAL as one of

the distortion measures of BAYYA in order to increase the versatility of the quality

measurement by determining vowel quality contained in a speech signal (see DEAL,

page 250, last three lines of 1st paragraph).

14.   Regarding **claim 14**, DEAL further teaches that the voice quality attributes of the

test voice signal include changes in pitch over time and changes in loudness over time

("acoustic measures of period and amplitude variation", DEAL, p. 251, 4th paragraph).

15.   Regarding **claim 15**, DEAL further teaches that the voice quality attribute of the

test voice signal includes a measure of partial loudness ("acoustic measures of...

spectral noise level", DEAL, p. 251, 4th paragraph).

16.   Regarding **claim 23**, the combination of BAYYA in view of REX in view of

TREURNIET teaches all the claimed limitation of claim 21.

        However, BAYYA in view of REX in view of TREURNIET do not disclose that the

measure of voice quality is at least one of roughness and hoarseness.

        In the same field of speech quality measurement, DEAL discloses a method of

measuring vocal roughness. DEAL teaches a measure of voice quality that is at least

one of roughness and hoarseness ("provide a quantitative acoustic index predictive of

perceived vowel roughness", DEAL, p. 251, 4th paragraph, where vowel roughness is

associated with voice roughness and hoarseness, see p. 251, 2nd paragraph).

        Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to use the measurement method of DEAL as one of

the distortion measures of BAYYA in order to increase the versatility of the quality

measurement by determining vowel quality contained in a speech signal (see DEAL,

page 250, last three lines of 1st paragraph).

17.   Regarding **claim 24**, DEAL further teaches that the voice quality attributes of the test voice signal include changes in pitch over time and changes in loudness over time ("acoustic measures of period and amplitude variation", DEAL, p. 251, 4th paragraph).

18.   Regarding **claim 25**, DEAL further teaches that the voice quality attribute of the test voice signal includes a measure of partial loudness ("acoustic measures of... spectral noise level", DEAL, p. 251, 4th paragraph).

19.   **Claims 6-10, 16-20, and 26-30** are rejected under 35 U.S.C. 103(a) as being unpatentable over BAYYA et al. (US 6,446,038) in view of REX in view of TREURNIET et al. (Patent No.: US 7,164,771), and in further view of HILLENBRAND et al. ("Acoustic Correlates of Breathy Vocal Quality").

20.   Regarding **claim 6**, the combination of BAYYA in view of REX in view of TREURNIET teaches all of the claimed limitation of claim 1.

        However, BAYYA in view of REX in view of TREURNIET do not disclose that the measure of voice quality is breathiness.

        In the same field of speech quality measurement, HILLENBRAND discloses a method of measuring vocal breathiness. HILLENBRAND teaches a measure of voice quality that is breathiness ("acoustic measures in predicting breathiness ratings", HILLENBRAND, *abstract*).

        Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the measurement method of HILLENBRAND as

one of the distortion measures of BAYYA in order to increase the versatility of the

quality measurement and to include quality measurements that compare different

speech signals with and without pathological conditions (see HILLENBRAND, page 311,

Abstract)

21.   Regarding **claim 7**, HILLENBRAND further teaches that the voice quality

attribute of the test voice signal includes a measure of low frequency periodic energy

("aspiration noise is inherently weak in the low frequencies", HILLENBRAND, p. 312, 2nd

paragraph, meaning the low frequencies contain a strong periodic component).

22.   Regarding **claim 8**, HILLENBRAND further teaches that the voice quality

attribute of the test voice signal includes a measure of high frequency aperiodic energy

("periodic component of the voice source is inherently weak in the mid and high

frequencies", HILLENBRAND, p. 312, 2nd paragraph, meaning the mid and high

frequencies contain a strong aperiodic component).

23.   Regarding **claim 9**, HILLENBRAND further teaches that the voice quality

attribute of the test voice signal includes a measure of partial loudness of a periodic

signal portion of the test voice signal ("measure of the... average energy below 4 kHz",

HILLENBRAND, p. 315, 4th paragraph, where the low frequencies contain a periodic

signal, see HILLENBRAND, p. 312, 2nd paragraph).

24.   Regarding **claim 10**, HILLENBRAND further teaches that the voice quality

attributes of the test voice signal include a measure of noise in the test voice signal and

a measure of partial loudness of the test voice signal ("measure of the average spectral

energy at or above 4 kHz to the average energy below 4 kHz", HILLENBRAND, p. 315,

4th paragraph, where the high frequencies contain noise and the low frequencies

contain a periodic signal, see HILLENBRAND, p. 312, 2nd paragraph).

25.   Regarding **claim 16**, the combination of BAYYA in view of REX in view of

TREURNIET teaches all of the claimed limitation of claim 11.

        However, BAYYA in view of REX in view of TREURNIET do not disclose that the

measure of voice quality is breathiness.

        In the same field of speech quality measurement, HILLENBRAND discloses a

method of measuring vocal breathiness. HILLENBRAND teaches a measure of voice

quality that is breathiness ("acoustic measures in predicting breathiness ratings",

HILLENBRAND, *abstract*).

        Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to use the measurement method of HILLENBRAND as

one of the distortion measures of BAYYA in order to increase the versatility of the

quality measurement and to include quality measurements that compare different

speech signals with and without pathological conditions (see HILLENBRAND, page 311,

Abstract)

26.   Regarding **claim 17**, HILLENBRAND further teaches that the voice quality
attribute of the test voice signal includes a measure of low frequency periodic energy
("aspiration noise is inherently weak in the low frequencies", HILLENBRAND, p. 312, 2nd
paragraph, meaning the low frequencies contain a strong periodic component).

27.   Regarding **claim 18**, HILLENBRAND further teaches that the voice quality
attribute of the test voice signal includes a measure of high frequency aperiodic energy
("periodic component of the voice source is inherently weak in the mid and high
frequencies", HILLENBRAND, p. 312, 2nd paragraph, meaning the mid and high
frequencies contain a strong aperiodic component).

28.   Regarding **claim 19**, HILLENBRAND further teaches that the voice quality
attribute of the test voice signal includes a measure of partial loudness of a periodic
signal portion of the test voice signal ("measure of the... average energy below 4 kHz",
HILLENBRAND, p. 315, 4th paragraph, where the low frequencies contain a periodic
signal, see HILLENBRAND, p. 312, 2nd paragraph).

29.   Regarding **claim 20**, HILLENBRAND further teaches that the voice quality
attributes of the test voice signal include a measure of noise in the test voice signal and
a measure of partial loudness of the test voice signal ("measure of the average spectral
energy at or above 4 kHz to the average energy below 4 kHz", HILLENBRAND, p. 315,

4th paragraph, where the high frequencies contain noise and the low frequencies

contain a periodic signal, see HILLENBRAND, p. 312, 2nd paragraph).

30.   Regarding **claim 26,** the combination of BAYYA in view of REX in view of

TREURNIET teaches all of the claimed limitation of claim 1.

However, BAYYA in view of REX in view of TREURNIET do not disclose that the

measure of voice quality is breathiness.

In the same field of speech quality measurement, HILLENBRAND discloses a

method of measuring vocal breathiness. HILLENBRAND teaches a measure of voice

quality that is breathiness ("acoustic measures in predicting breathiness ratings",

HILLENBRAND, *abstract*).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to use the measurement method of HILLENBRAND as

one of the distortion measures of BAYYA in order to increase the versatility of the

quality measurement and to include quality measurements that compare different

speech signals with and without pathological conditions (see HILLENBRAND, page 311,

Abstract).

31.   Regarding **claim 27,** HILLENBRAND further teaches that the voice quality

attribute of the test voice signal includes a measure of low frequency periodic energy

("aspiration noise is inherently weak in the low frequencies", HILLENBRAND, p. 312, 2nd

paragraph, meaning the low frequencies contain a strong periodic component).

5.   Regarding **claim 28**, HILLENBRAND further teaches that the voice quality attribute of the test voice signal includes a measure of high frequency aperiodic energy ("periodic component of the voice source is inherently weak in the mid and high frequencies", HILLENBRAND, p. 312, 2nd paragraph, meaning the mid and high frequencies contain a strong aperiodic component).

32.   Regarding **claim 29**, HILLENBRAND further teaches that the voice quality attribute of the test voice signal includes a measure of partial loudness of a periodic signal portion of the test voice signal ("measure of the... average energy below 4 kHz", HILLENBRAND, p. 315, 4th paragraph, where the low frequencies contain a periodic signal, see HILLENBRAND, p. 312, 2nd paragraph).

33.   Regarding **claim 30**, HILLENBRAND further teaches that the voice quality attributes of the test voice signal include a measure of noise in the test voice signal and a measure of partial loudness of the test voice signal ("measure of the average spectral energy at or above 4 kHz to the average energy below 4 kHz", HILLENBRAND, p. 315, 4th paragraph, where the high frequencies contain noise and the low frequencies contain a periodic signal, see HILLENBRAND, p. 312, 2nd paragraph).

Conclusion

10.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

35.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bogdashevsky (US 6,006,188) is cited to disclose determining psychological or physiological characteristics based on input speech. Schulz (US 2004/0059578) is cited to disclose improving speech quality.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to 3333 whose telephone number is (571)270-1650. The examiner can normally be reached on MON.-THURS. 7:00a.m.-4:00p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Patrick Edouard can be reached on (571)272-7603. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Paras Shah/
Examiner, Art Unit 2626

12/04/2005

/Patrick N. Edouard/
Supervisory Patent Examiner, Art Unit 2626